Wasatch Bridger and Uinta strata contain representatives of the orders Cheiroptera and Insectivora, the sub-orders Artio- and Perissodactyla, and the families Vespertilionidæ and Tapiridæ; but no living genera.[1] The Mammalia are obviously in the same stage of evolution as in the Eocenes of Europe, although there are but few genera, and no species common to the two.

The White River and Loup Fork groups present us with the living genera *Sciurus*, *Castor*, *Hystrix*, *Rhinoceros*, *Dicotyles*, and others; but no living species, as is the case with the Miocenes of Europe. In the Pliocenes of Oregon the first living species appear, such as the Beaver, the Prairie Wolf, and two Rodents (*Thomomys clusius* and *T. talpoides*), while in the Pleistocene river deposits and caves, from Eschscholtz Bay in the north to the Gulf of Mexico in the south, there is the same grouping of living with extinct species as in Europe, and the same evidence in the glaciated regions that the Mammalia occupied the land after the retreat of the ice.

If we analyze the rich and abundant fauna yielded by the caves and river deposits both of South America and of Australia, it will be seen that the Pleistocene group in each is marked by the presence of numerous living species in each, the first being remarkable for their gigantic extinct Edentata, and the second for their equally gigantic extinct Marsupials.

The admirable work of Mr. Lydekker allows us also to see how these definitions apply to the fossil Mammalia of India. The Miocene fauna of the Lower Sivaliks has yielded the living genera *Rhinoceros* and *Manis*, and no living species.

The fauna of the Upper Sivaliks, although it has only been shown, and that with some doubt, to contain one living Mammal, the Nilghai (*Boselaphus tragocamelus*), stands in the same relation to that of the Oriental Region as that of the Pliocenes of Europe to that of the Palæarctic Region, and is therefore Pliocene. And lastly, the Narbada formation presents us with the first traces of Palæolithic Man in India in association with the living one-horned Rhinoceros, the Nilghai, the Indian Buffalo, two extinct Hippopotami, Elephants, and others, and is Pleistocene.

It may be objected to the Prehistoric and Historic divisions of the Tertiary period that neither the one nor the other properly fall within the domain of geology. It will, however, be found that in tracing the fauna and flora from the Eocene downwards to the present day there is no break which renders it possible to stop short at the close of the Pleistocene. The living plants and animals were in existence in the Pleistocene age in every part of the world which has been investigated. The European Mollusca were in Europe in the Pliocene age. The only difference between the Pleistocene fauna, on the one hand, and the Prehistoric, on the other, consists in the extinction of certain of the Mammalia at the close of the Pleistocene age in the Old and New Worlds, and in Australia. The Prehistoric fauna in Europe is also characterized by the introduction of the ancestors of the present domestic animals, some of which, such as the Celtic shorthorn (*Bos longifrons*), sheep, goat, and domestic hog, reverted to a feral condition, and have left their remains in caves, alluvia, and peat-bogs over the whole of the British Isles and the Continent. These remains, along with those of Man in the Neolithic, Bronze, and Iron stages of culture, mark off the Prehistoric from the Pleistocene strata. There is surely no reason why a cave used by Palæolithic Man should be handed over to the geologist, while that used by men in the Prehistoric age should be taken out of his province, or why he should be asked to study the lower strata only in a given section, and leave the upper to be dealt with by the archæologist. In these cases the ground is common to geology and archæology, and the same things, if they are looked at from the stand-point of the history of the earth, belong to the first, and, if from the stand-point of the history of Man, to the second.

If, however, there be no break of continuity in the series of events from the Pleistocene to the Prehistoric ages, still less is there in those which connect the Prehistoric with the period embraced by history. The historic date of a cave or of a bed of alluvium is as clearly indicated by the occurrence of a coin as the geological position of a stratum is defined by an appeal to a characteristic fossil. The gradual unfolding of the present order of things from what went before compels me to recognize the fact that the Tertiary period extends down to the present day. The Historic period is being recorded in the strata now being formed, exactly in the same way as the other divisions of the Tertiary have left their mark in the crust of the earth, and history is incomplete without an appeal to the geological record. In the masterly outline of the destruction of Roman civilization in Britain the historian of the English Conquest was obliged to use the evidence, obtained from the upper strata, in caves which had been used by refugees from the cities and villas; and among the materials for the future history of this city there are, to my mind, none more striking than the proof, offered by the silt in the great Roman bath, that the resort of crowds had become so utterly desolate and lonely in the ages following the English Conquest as to allow of the nesting of the wild duck.

I turn now to the place of Man in the geological record, a question which has advanced but little since the year 1864. Then, as now, his relation to the glacial strata in Britain was in dispute. It must be confessed that the question is still without a satisfactory answer, and that it may well be put to "a suspense account." We may, however, console ourselves with the reflection that the River-drift Man appears in the Pleistocene strata of England, France, Spain, Italy, Greece, Algiers, Egypt, Palestine, and India along with Pleistocene animals, some of which were pre-glacial in Britain. He is also proved to have been post-glacial in Britain, and was probably living in happy, sunny, southern regions, where there was no ice, and therefore no Glacial period, throughout the Pleistocene age.

It may further be remarked that Man appears in the geological record where he might be expected to appear. In the Eocene the Primates were represented by various Lemuroids (*Adapis*, *Necrolemur*, and others) in the Old and New Worlds. In the Miocene the Simiadæ (*Dryopithecus*, *Pliopithecus*, *Oreopithecus*) appear in Europe, while Man himself appears, along with the living species of Mammalia, in the Pleistocene Age, both in Europe and in India.

The question of the antiquity of Man is inseparably connected with the further question: "Is it possible to measure the lapse of geological time in years?" Various attempts have been made, and all, as it seems to me, have ended in failure. Till we know the rate of causation in the past, and until we can be sure that it has been invariable and uninterrupted, I cannot see anything but failure in the future. Neither the rate of the erosion of the land by sub-aërial agencies, nor its destruction by oceanic currents, nor the rate of the deposit of stalagmite or of the movement of the glaciers, has as yet given us anything at all approaching a satisfactory date. We only have a sequence of events recorded in the rocks, with intervals the length of which we cannot measure. We do not know the exact duration of any one geological event. Till we know both, it is surely impossible to fix a date, in terms of years, either for the first appearance of Man or for any event outside the written record. We may draw cheques upon "the bank of force" as well as "on the bank of time."

Two of my predecessors in this chair, Dr. Woodward and Prof. Judd, have dealt with the position of our science in relation to biology and mineralogy. Prof. Phillips in 1864 pointed out that the later ages in geology and the earlier ages of mankind were fairly united together in one large field of inquiry. In these remarks I have set myself the task of examining that side of our science which looks towards history. My conception of the aim and results of geology is that it should present a universal history of the various phases through which the earth and its inhabitants have passed in the various periods, until ultimately the story of the earth, and how it came to be what it is, is merged in the story of Man and his works in the written records. Whatever the future of geology may be, it certainly does not seem likely to suffer in the struggle for existence in the scientific renascence of the nineteenth century.

---

[1] The genus *Vesperugo* has not been satisfactorily determined.—Cope, "Report of Geol. Survey of the Territories: Tertiary Vertebrata," i., 1884.

NOTES.

MAJOR-GENERAL PRJEVALSKY started on Thursday last on his fifth journey of exploration in Tibet, with the intention of penetrating, if possible, into Lhassa, the capital. The General, with his officers and Cossacks, will this time take advantage of the new Central Asian railway as far as Samarcand, whence they will proceed to Semiretchinsk, and so to the Tibetan table-lands. General Prjevalsky will, it is thought, on this occasion have the best chance ever afforded him of entering the forbidden residence of the Dalai Lama.

COLONEL HEAVISIDE, of the Indian Survey Department, has retired after more than twenty years' service in the Department, during which he had charge of several important geodetic and geographical operations, notably the completion and extension of the series of pendulum observations formerly carried on by Captain Basevi.

A SERIOUS earthquake, which was felt throughout both islands, occurred in New Zealand on the morning of the 1st instant. There were five distinct shocks, extending over the space of nearly half an hour. At Christchurch the spire of the Cathedral was destroyed, and other buildings were damaged. The inhabitants at first fled from their homes, but returned later when the danger appeared over. Another shock has since been reported from Westport, on the south-west coast of the Nelson district.

DURING the month of August at the Granton Marine Station, the use of which was kindly granted by Dr. Murray of the *Challenger*, Mr. Patrick Geddes and Mr. T. Arthur Thomson conducted a class of over thirty students of both sexes—teachers, medical students, and others from various parts of Scotland and England—through a course of lectures and laboratory work in botany and zoology. The work at Granton was supplemented by visits to the Botanical Gardens, Museum, &c., and by field and marine excursions, including a day's dredging in the Firth of Forth. This is the second year of the course, and it is meant to be continued in future years.

A CORRESPONDENT of the *Daily News* gives the following account of the recent eruption of Bandai-San in Northern Japan:—"The rumbling and trembling of the earth have now stopped, but the mountain still belches forth smoke, and there are evidences that mighty subterranean forces are still at work. The place where the disaster occurred has been and is greatly changing, mountains have risen where there were none before, and large lakes appearing where once there were only rice fields. This being so, it is with the greatest difficulty that guides can be procured, as none can tell where a road now leads and how far it is passable. Landmarks are obliterated, and villages which but a week ago nestled among the rich and plentiful vegetation of the mountain-side are now beneath twenty feet of ash and cinders. The wounded are receiving treatment in the schoolhouse at Inawashiro, but their condition is terrible. Some have fractured skulls, the majority broken limbs, while others are fearfully burned. Five villages have been totally buried. The state of the bodies recovered resembles the appearance of victims of a huge boiler explosion. Many are cut to pieces, and others parboiled, so that it is difficult to distinguish sex. But the most ghastly sights which met the eye of the helpers were bodies dangling on the branches of blackened and charred trees. Thrown into the air by the awful violence of the eruption, their descent had in many cases been arrested by the trees, and there the victims hung, their bodies exposed to the cruel and well-nigh ceaseless rain of red-hot cinders and burning ashes. From appearances death speedily relieved them from their agony, yet, short as the time was, their sufferings must have been past belief. In other places flesh hangs from the branches of trees as paper from London telegraph wires. Bandai-San is composed of five separate peaks, of which the largest is called Great Bandai. The second is a perfectly smooth mountain. The third is called Kushigamine, and is the second in height. The fourth is called the Middle or Northern Bandai, and is the one which broke forth; while the fifth, which is called the Small Bandai, is close to the fourth. Great Bandai is only covered with white ashes, but No. 2 has been greatly shaken, while all the trees above the centre of the mountain have been destroyed. From No. 3 large stones and boulders have been hurled to the bottom, and from half-way down the mountain its sides are covered with bluish earth. No. 4, from which the eruption really occurred, has been entirely blown away, the lighter pieces ejected from it being swept away over the neighbouring mountains, whilst the heavier pieces were carried some five or seven miles, and have formed a table-land at its base, covered with stones and ashes. No report has been received as to any foreigners having been within the fatal region at the time of the occurrence."

M. CHEVREUL entered his 103rd year last week. On Tuesday he was able to walk through the Sanitary Exhibition at the Palace of Industry.

THE twenty-fifth annual meeting of the British Pharmaceutical Association is being held in Bath this week. On Monday evening the President, Mr. F. Baden Benger, and other officers of the Conference held a reception at the Grand Hotel, followed by a *conversazione*. The opening meeting took place on Tuesday morning. The Presidential address dealt largely with the progress of the Association since its establishment, and with the preliminary education of pharmacists.

THE thirty-seventh meeting of the American Association for the Advancement of Science was held at Cleveland, Ohio, on August 15 and following days. *Science* states that the meetings were not as well attended as in past years, but the whole gathering was nevertheless successful. The largest attendance of members appears to have been 303. The scientific departments at Washington were well represented, and the most prominent scientific men of the country were present. According to the secretary's report, the financial condition of the Association is excellent. The research fund, consisting of the contributions of life members, amounts to more than 4400 dollars. The subject of the address of Prof. Langley, the retiring President, was the history of the theory of radiant heat, which we hope to reprint *in extenso*, if space permits, on a future occasion. Prior to the meeting, advantage was taken of the presence of a number of American geologists to take the preliminary steps for the establishment of an American Geological Society. In its general report of the meeting, *Science* refers specially to a lecture delivered by Prof. Stanley Hall. "It was the first time that the new psychology had been given a place on the programme of the Association. . . . Prof. Hall gave a brief review of the scope of experimental psychology. He dwelt on the researches made in the study of psychologic physiology, and on the functions of brain and nerves; he mentioned the methods of psychophysic inquiries, and the important bearing of ethnological studies upon psychological questions. He concluded his sketch, which was listened to with the greatest attention, with a reference to the study of hypnotism, which is one of the most promising fields of psychic research." Major Powell is the President for the current year, and Prof. Mendenhall for next year.

MR. COOK, the President of the Section of Geology and Geography, took for the subject of his address the International Geological Congress, and the part of American geologists in it. He recalls the fact that in 1876 the Association originated the Congress of Geologists in Paris in 1878 for the settling of obscure points relating to geological classification and nomenclature; since that time similar Congresses have been held in Bologna and Berlin, and one is about to be held in London, but, says Mr. Cook, a meeting of the Congress must be held in the United States, and American geology must be fully represented, before any conclusion can be reached which will be accepted by the scientific world, and therefore an attempt will be made at the London Congress to have the meeting of 1891 held in the United States. The discussion on the important topics here mentioned should not be regarded as closed until after the American meeting, and he defines the business of American geologists, prior to the meeting, to be the preparation of a case which will fairly "present the claims of American geology to representation in a general system of geology."

THE Session of the Central Institution of the City and Guilds of London Institute will commence on October 2. The Clothworkers', Siemens's, Mitchell, and Institute's Scholarships will be competed for at an examination held on September 25 to 28. According to the Annual Report for the past year there has again been a large increase in the total number of candidates examined. In 1887, 5508 were examined, of whom 3090 passed; in 1888, 6166 were examined, of whom 3510 passed. The number of centres increased in the same period from 216 to 240, while another subject, viz. practical bread-making, was added to the list of subjects, which now number 49. This year, for the second time, examinations were held in New South Wales, candidates presenting themselves from Sydney, Bathurst, and Newcastle. The worked papers, as well as specimens of the hand-work of the candidates, were forwarded to this country in time for the inclusion of the results in the present Report. The number of colonial candidates has increased from 48 to 51, and the number of those who have passed from 31 to 34. 10,404 students were receiving instruction in the United Kingdom in 475 classes, in 183 different towns. Last year the corresponding numbers were 8613 students, 365 classes, and 121 towns; and these figures do not include the students at the Finsbury Technical College, the Yorkshire College, Leeds, and other Colleges the Professors of which do not receive grants on results, and the candidates from which are classed as "external." With the establishment of new Polytechnic Institutions in different parts of London, it is anticipated that there will be a large increase in the number of students in the technical classes registered by the Institute and in the number of candidates for examination. In most of the chemical subjects the number of candidates is diminishing, and the majority have received their instruction in institutions which obtain no help from the Institute by way of payment on results.

THE most interesting paper in the recent number of the Journal of the Anthropological Society of Bombay is Mr. Fawcett's account of the Saoros or Sowrahs of the Ganjam Hill Tracts. A good deal of Mr. Fawcett's paper is devoted to the investigation of the religious ideas, sacrifices, and funeral rites of the Saoros, and his account furnishes an interesting illustration of several well-known phenomena of early forms of religious belief. The objects of worship fall into two classes: malevolent deities, such as Jalia, Kanni, and Laukan, the sun, and ancestral spirits. Every human being possesses a *kulba*, or soul, which departs from the body at death, but which still retains the ordinary tastes of the Saoro—*e.g.* for tobacco and liquor—and which must be satisfied, or it will haunt the living. In the more primitive parts of the country, everything a man possesses—weapons, cloths, his reaping-hook, and some money—are burnt with him; but this is falling out of use. A hut is built for the *kulba* to dwell in, and food is placed there; but the more important ceremony is the *guar*, which occurs later, the great feature of which is the erection of a stone to the memory of the deceased. Near each village, clusters of such stones, standing upright in the ground, may be seen. The *guar* gives the *kulba* considerable satisfaction; but it is not quite satisfied till the *karja* is celebrated: this being a great biennial feast to the dead, when, after the sacrifice of many buffaloes and the consumption of much liquor, every house in which there has been a death is burnt; the *kulba* is finally driven away to the jungle or the hill-side. Sacrifices are made to appease deities or *kulbas* who have done harm, and in every paddy-field, when the paddy is sprouting, as well as at harvest, an offering of a goat must be made. It does not appear, however, that human sacrifice, once so common among the Khonds, was ever practised by the Saoros. Like all other savages, the Saoros have their priests, or diviners, called *kudangs*, whose occupation seems to be partly hereditary. The *kudang*, like the modern medium, is able to interview the spirit of the deceased and to ascertain his wishes. The method of divination usually practised is that of dropping from a leaf-cup grains of rice, uttering the name of a deity as each falls, and so ascertaining which divinity is the cause of the disease or other calamity. A similar practice has long been known to be in force among the Khonds, though Mr. Fawcett does not mention the fact. An account is given of an exorcism witnessed by the author, in the case of a boy who had suffered much from fever, which was supposed to be caused by the sun. The *kudang* told Mr. Fawcett afterwards that he had given the deity a good talking to and turned him out. "No fear of that deity returning to the boy after what he had said to him!" The *kudangs*, however, it must be added, generally work like ordinary mortals, and even when they are called in to officiate as priests they do not seem, from the account given of their fasting and exertions, to get their rewards for nothing.

EUROPE cannot compete with the United States in the loftiness of its stations for taking meteorological observations. There are only two stations on the European continent which reach any very great height, being about 10,000 feet and 11,000 feet respectively. Among the stations in America is Pike's Peak, which has an altitude of 14,100 feet—or only about 1600 feet lower than the summit of Mont Blanc—and exceeding by more than 3000 feet any meteorological station in Europe. These great heights are much more accessible in the United States than in Europe, there being five stations in America where a height of 11,000 feet or more is reached by railroads built to facilitating mining work. The highest of those in North America Mount Lincoln, in Colorado, the mining works on which are 14,297 feet above the sea-level, and it has a meteorological station conducted by Harvard College. Another station is placed part way up the mountain, at a height of 13,500 feet. In the Andes Range, in Peru, continuous meteorological observations are also carried on, the loftiest point for this purpose being 14,300 feet above the level of the sea.

A CORRESPONDENT of the *Daily News* in Lucerne sends to that paper an account of an electric mountain railway—the first of its kind—which has recently been opened to the public at the Burgenstock, near Lucerne. Hitherto it has been considered impossible to construct a funicular mountain railway with a curve; but the new line up the Burgenstock has achieved that feat under the superintendence of Mr. Abt, the Swiss electrical engineer. The rails describe one grand curve formed upon an angle of 112°, and the journey is made as steadily and smoothly as upon any of the straight funiculars previously constructed. A bed has been cut, for the most part out of the solid rock, in the mountain-side from the shore of the Lake of Lucerne to the height of the Burgenstock—1330 feet above its level, and 2860 feet above the level of the sea. The total length of the line is 938 metres, and it commences with a gradient of 32 per cent., which is increased to 58 per cent. after the first 400 metres, and this is maintained for the rest of the journey. A single pair of rails is used throughout, with the exception of a few yards at half distance to permit the two cars to pass. Through the opposition of the Swiss Government, each car is at the present time only allowed to run the half distance, and they insist upon the passengers changing, in order, as they say, to avoid collision or accident. A number of journeys were made up and down the mountain in company with an engineer, and the experience is sufficient to prove that the prohibition is altogether unnecessary. The motive power, electricity, is generated by two dynamos, each of 25 horse-power, which are worked by a water-wheel of 125 horse-power, erected upon the River Aar at its mouth at Buochs three miles away. Only one man is required to manage the train, and the movement of the cars is completely under his control. One dynamo is sufficient to perform the work of hauling up and letting down the cars containing fifty or sixty persons. At the end of the journey, completed in about fifteen minutes, at an ordinary walking speed, the car moves gently against a spring buffer, and is locked by a lever, without noise and without jolting the passengers. This interesting undertaking has been carried out at a cost of £25,000.

MR. E. T. DUMPLE, writing in the *Geological Bulletin* of Texas, brings out a very interesting fact, and one which may shed some light upon the question of who were the builders of the shell-mounds of the coast regions of Texas. During the great storm of 1886, which so nearly destroyed Sabine Pass, one of these shell-mounds, which was near a certain house on the river-bank, and the locality of which was exactly known, was destroyed or carried away by the violence of the waves, and rebuilt nearly half a mile farther up stream than it formerly stood. It is therefore possible that these so-called Indian shell-mounds, which are composed almost entirely of shells, with fragments of pottery, and sometimes a crumbling bone or two, were not built, as has been supposed, by Indian tribes who lived on shell-fish, but are entirely due to the action of the water; and the presence of the Indian relics may be easily accounted for by remembering that these mounds are usually found in low ground, and, being high and dry, would naturally be selected as camping-places by the Indians in their hunting and fishing expeditions.

THE Vienna Correspondent of the *Times* records a curious relic of mediæval superstition in Austria. The Burgomaster of Zuraki, in Galicia, has just instituted a prosecution before the Criminal Court of Solotwina against a man named Jean Kowalesink for having, "by his malicious sorceries and incantations, caused a hailstorm to devastate the fields of Zuraki on July 28." The damages occasioned by Kowalesink's uncanny power over the elements are laid at 6000 florins.

WE are glad to report that the Central Meteorological Observatory of Mexico has recommenced the publication of its *Boletin Mensual*, and in a more convenient form than before. This publication had been discontinued since December 1885. It contains only a summary of the observations made at twenty or thirty stations, but the hope is expressed that the publication of the observations made at certain hours will be soon undertaken, and that the arrears will also be taken up, as the observations have been regularly made. The Bulletins for the first five months of this year have been received.

THE Report of the Meteorological Commission of the Cape of Good Hope, for the year 1887, states that "the whole service has assumed a satisfactory character." Monthly and yearly summaries are given for twenty-nine stations, and for a large number of rainfall stations. As an inducement to observers, they are presented with the instruments with which they have made a series of satisfactory observations for a continuous period of five years. Summarized reports are sent daily to each coast port, and are there entered on a sketch-map for the benefit of the seafaring community. We observe, however, that in counting the number of wet days, a rainy day is taken as one upon which 0·03 inch is recorded, whereas a quantity of 0·01 inch is the standard generally adopted in this country. The Commission express the hope that in time they may be able to issue storm warnings.

IN June last an interesting archæological discovery was made at Sonderby, on the west coast of Jutland. It consisted of about thirty urns of clay found in a moss at a depth of 3 feet. They occupied an area 4 feet wide and 10 feet long. Formerly there was a shallow lake here. Most of the vessels rested upon rough stones, but there was no trace of stone walls or roof; they varied from 2 to 8 inches in height. In most of them lay ashes and remnants of calcined bones, whilst the bottom was lined with some reed-like kind of grass. Some of the urns had lids, but others appear to have been placed in the earth open. Most of them were very simple in form, with smooth sides, but on some of the larger there were three knobs at the sides, and attempts at rough ornamentation. No metal or stone implement was found. In the same moss some huge oak trunks were also dug out.

A KIEL schoolmaster, Herr Spiedt, has excavated a so called "Viking mound" in the south of Jutland, close to the old frontier between Denmark and Prussia. In the eastern edge remains of a skeleton were found, and in the centre an oaken coffin, nailed with iron nails, containing the skeleton of a tall powerful man was found; but no ornaments, weapons, or objects of any kind. The head pointed to the north-west. It was close to this mound that a Runic stone was found some years ago with the following inscription in runes: "King Svein set (raised) stone after (on the death of) Skarde, his homestead companion (probably meaning boy companion), who travelled west, and died in Hedeby." King Svein is the famous King Svein with the Double Beard, who ascended the thrones of England and Denmark on the death of his brother, King Canute, and his friend was one Skarde, who fought for him in this country. Hedeby was the ancient name for the town of Schleswig. It is believed that the skeleton is that of Skarde.

THE "Class-book of Elementary Chemistry," which Mr. W. W. Fisher, Aldrichian Demonstrator of Chemistry at Oxford, is preparing for the Clarendon Press Series, is nearly ready, and will be published in a few days.

THE additions to the Zoological Society's Gardens during the past week include a Small Hill Mynah (*Gracula religiosa*) from India, presented by Mr. Alexander Robertson; a Common Sheldrake (*Tadorna vulpanser*), British, presented by the Rev. H. H. Slater; an Avocet (*Recurvirostra avocetta*) from Holland, presented by Mr. J. Hoogerduyn; two Common Chameleons (*Chamæleon vulgaris*) from North Africa, presented by Mr. J. Alfred Lockwood; a Sea Anemone (*Bolvara eques*), a British Coral (*Caryophyllaca*, sp. inc.) from British Seas, presented by the Marine Biological Station, Plymouth, per Mr. G. C. Bourne; a Brown Bear (*Ursus arctos* ♂), European, a White-backed Piping Crow (*Gymnorhina leuconota*) from Australia, twelve Mandarin Ducks (*Æx galericulata*, 6 ♂, 6 ♀) from China, deposited; two White-headed Parrots (*Pionus senilis*) from Mexico, four Oyster-catchers (*Himantopus ostralegus*) from Holland, purchased.

ASTRONOMICAL PHENOMENA FOR THE WEEK 1888 SEPTEMBER 9-15.

(FOR the reckoning of time the civil day, commencing at Greenwich mean midnight, counting the hours on to 24, is here employed.)

At Greenwich on September 9

Sun rises, 5h. 28m.; souths, 11h. 57m. 1·8s.; sets, 18h. 26m.: right asc. on meridian, 11h. 12·9m.; decl. 5° 4′ N. Sidereal Time at Sunset, 17h. 43m.

Moon (at First Quarter September 12, 22h.) rises, 9h. 19m.; souths, 14h. 55m.; sets, 20h. 19m.: right asc. on meridian, 14h. 11·1m.; decl. 7° 48′ S.

Planet.	Rises.		Souths.		Sets.		Right asc. and declination on meridian.			
	h.	m.	h.	m.	h.	m.	h.	m.	°	′
Mercury..	6	45	12	49	18	53	12	4·7	0	2 N.
Venus ...	6	57	12	59	19	1	12	14·9	0	23 S.
Mars ...	12	25	16	30	20	35	15	46·7	21	30 S.
Jupiter ...	12	16	16	34	20	52	15	51·0	19	31 S.
Saturn ...	2	21	9	55	17	29	9	10·2	17	5 N.
Uranus ...	8	8	13	43	19	18	12	58·9	5	38 S.
Neptune..	21	1*	4	48	12	35	4	2·4	18	59 N.

* Indicates that the rising is that of the preceding evening.